

Claim Amendments

1. (currently amended) A method of preventing unintended touch pad input resulting from accidental touching of a touch pad device in an electronic device by an external object when the touch pad device is exposed, said electronic device including a key lock function settable in a first state allowing a user to input into the electronic device one of a plurality of input functions, and settable in a second state allowing the user to input into the electronic device one of a number of selected ones of said plurality of input functions, wherein said touch pad device allows the user to execute a touch-pad function by placing the object at the touch pad device, thereby providing a touch signal for achieving a touch pad input indicative of the touch-pad function, and wherein the touch pad device comprises:

a touch pad area having a first side and an opposing second side;

a first set of optical sensor components disposed along the first side of the touch pad area;

and

a second set of optical sensor components disposed along the second side of the touch pad area, each of the first and second sets of optical sensor components including at least two light emitters and one light receiver disposed substantially between the two light emitters to detect the presence of the object at the touch pad device, each of the light emitters located at a location different from other ones of the light emitters and also different from the light receivers, the light emitters emitting light only when activated, such that the light receiver is capable of receiving light emitted from the activated light emitters and reflected by the object for providing an output signal, and wherein the output signal is caused to change due to an increased amount of light received in the light receiver when the object is present, said method comprising the steps of:

detecting the change in the output signal for providing the touch signal when the object is present;

determining, in response to the touch signal, whether the key lock function is in the first state or in the second state when the touch area is exposed to the external object; and

if the key lock function is the first state, or

if the key lock function is in the second state and the touch pad function is one of said selected input functions,

providing the touch pad input indicative of the touch pad function.

2. (original) The method of claim 1, wherein the providing step is carried out by a software.

3. (original) The method of claim 1, wherein the determining and the providing steps are carried out by a software.

4. (original) The method of claim 1, wherein the touch pad device allows the user to choose one of a plurality of touch pad functions based on the location of the object present at the touch pad device, said method further comprising the step of determining the chosen touch pad function based on the change in the output signal, wherein the touch signal is indicative of the chosen touch pad function.

5. (original) The method of claim 1, wherein the number of the selected input functions includes zero.

6. (currently amended) A method of preventing unintended touch pad input resulting from accidental touching of a touch pad device in an electronic device by an external object when the touch pad device is exposed, said electronic device including a key lock function settable in a first state allowing a user to input into the electronic device one of a plurality of input functions, and settable in a second state allowing the user to input into the electronic device one of a number of selected ones of said plurality of input functions, wherein said touch pad device allows the user to execute a touch-pad function by placing the object at the touch pad device, thereby providing a touch signal for achieving a touch pad input indicative of the touch-pad function, and wherein the touch pad device comprises:

a touch pad area having a first side and an opposing second side;

a first set of optical sensor components disposed along the first side of the touch pad area;

and

a second set of optical sensor components disposed along the second side of the touch pad area, each of the first and second sets of optical sensor components including at least two light emitters and one light receiver disposed substantially between the two light emitters to

detect the presence of the object at the touch pad device, each of the light emitters located at a location different from other ones of the light emitters and also different from the light receivers, the light emitters emitting light only when activated, such that the light receiver is capable of receiving light emitted from the activated light emitters and reflected by the object for providing an output signal, and wherein the output signal is caused to change due to an increased amount of light received in the light receiver when the object is present, said method comprising the steps of:

detecting the change in the output signal for providing the touch signal when the object is present;

determining, in response to the touch signal, whether the key lock function is in the first state or in the second state when the touch area is exposed to the external object; and

providing the touch pad input indicative of the touch pad function only if the key lock function is the first state.

7. (original) The method of claim 6, further comprising the step of powering off the optical sensor components when the key lock function is in the second state.

8. (original) The method of claim 7, wherein the powering off step is carried out by a software.

9. (original) The method of claim 6, wherein the optical sensor components are controlled by one or more controlling devices, and wherein the optical sensor components and the controlling devices are powered by a power source, said method further comprising the step of turning off the power source to the optical sensor components and the controlling devices by a software for conserving the power source.

10. (currently amended) An electronic device having a touch pad device for allowing a user to execute a touch-pad function by placing an external object in or near the touch pad device when the touch pad device is exposed to the external object, thereby providing a touch signal for achieving a touch pad input indicative of the touch pad function, wherein the touch pad device comprises:

a touch pad area having a first side and an opposing second side;

a first set of optical sensor components disposed along the first side of the touch pad area;  
and

a second set of optical sensor components disposed along the second side of the touch pad area, each of the first and second sets of optical sensor components including at least two light emitters and one light receiver disposed substantially between the two light emitters to detect the presence of the object at the touch pad device, each of the light emitters located at a location different from other ones of the light emitters and also different from the light receivers, the light emitters emitting light only when activated, such that the light receiver is capable of receiving light emitted from the light emitters and reflected by the object for providing an output signal, and wherein the output signal is caused to change due to an increased amount of light received in the light receiver when the object is present, said electronic device comprising:

a key lock function settable in a first state to allow a user to input into the electronic device one of a plurality of input functions when the touch pad area is exposed to the external object and settable in a second state to allow the user to input into the electronic device one of a number of selected ones of said plurality of input functions when the touch pad area is exposed to the external object;

means, for detecting the change in the output signal for providing the touch signal when the object is present;

means, responsive to the touch signal, for determining whether the key lock function is in the first state or in the second state for providing a state signal indicative of the state of the key lock function; and

means, responsive to the state signal, for providing the touch pad input indicative of the touch pad function if the key lock function is in the first state, or

if the key lock function is in the second state and the touch pad function is one of said selected functions.

11. (original) The electronic device of claim 10, wherein the determining means includes a software program for determining the key lock state.

12. (original) The electronic device of claim 10, wherein the providing means includes a software program for carrying out the touch pad input.

13. (new) The method of claim 1, wherein said detecting step is carried out in a number of measurements by selectively activating one or more light emitters such that at least one activated light emitter in one measurement is different from at least one activated light emitter in another measurement.

14 (new) The method of claim 6, wherein said detecting step is carried out in a number of measurements by selectively activating one or more light emitters such that at least one activated light emitter in one measurement is different from at least one activated light emitter in another measurement.

15. (new) The electronic device of claim 10, wherein the detecting means detects the change in the output signal in a number of measurements by selectively activating one or more light emitters such that at least one activated light emitter in one measurement is different from at least one activated light emitter in another measurement.